



CAIT

Center for Advanced Infrastructure & Transportation
Rutgers, The State University of New Jersey

QUARTERLY PROGRESS REPORT

Project Title:	Evaluation of Adaptive Control Strategies for NJ Highways		
RFP NUMBER: N/A	NJDOT RESEARCH PROJECT MANAGER: Karl Brodtman		
TASK ORDER NUMBER/Study Number: 101 / 4-26682	PRINCIPAL INVESTIGATOR: Kaan Ozbay		
Study Start Date: 01/01/2001 Study End Date: 12/31/2003	Period Covered: 3 rd Quarter 2003		

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Task 1: Literature Survey	10%	30%	100%	10%
Task 2: Inventory Assessment	25%	20%	100%	25%
Task 3: Site Selection	5%	0%	100%	5%
Task 4: DSS Development	35%	7%	90%	31.5%
Task 5: Gap Analysis	5%	80%	100%	5%
Task 6: Implementation Strategies	5%			
Task 7: Training	5%			
Progress Reports				
Final Report	10%	40%	40%	4%
TOTAL	100%			80.5%

1. The percentages were adjusted to reflect the work needed for each task.

1. Progress this quarter by task:

Task 1: This task is complete.

Tasks 2 and 3: We completed these tasks for the sites given to us by NJDOT. .

Task 4:

We continue to spend considerable amount of time on this task due the following major developments:

- None of the adaptive control strategies tested in this project namely, SCOOT, SCATS, and OPAC, could be obtained from the developers of the FHWA. This was not anticipated when we started the project but in time it became apparent that these adaptive traffic control programs were not available. The communication details with the developers can be made available if needed.
- This lack of cooperation from the developers created unexpected delays and we are still working on the calibration and design of these algorithms so that they can be tested for the intersections given to us by NJDOT.
- We continued to run tests using the networks we coded to obtain the following information:
 - Impact of traffic conditions on the performance of adaptive control strategies
 - The accuracy of traffic simulation in terms of capturing real-world conditions
 - The accuracy of widely accepted delay equations in terms of capturing intersection performance which are used to evaluate adaptive signal strategies
- The rule based is being modified to take into account uncertainties.
- Continue the work on implementing SCATS, SCOOT, and OPAC for different types of geometries and traffic conditions.

Task 5: We documented the data needed to create the three arterial networks and the gaps that exist in terms of data.

Department of Civil and Environmental Engineering
623 Bowser Rd. Piscataway NJ 08854-8014
Tel : 732-445-0579 Fax: 732-445-0577

CAIT Confidential

Adaptive-QR-9-1-2003-FINAL.doc

Page 1 of 2



Final Report: Parts of the final report that deal with the first 3 tasks and portion of task 4 was put together as a draft report.

2. Proposed activities for next quarter by task

Task 6: We will continue working on developing guidelines for implementation strategies. The prototype expert system program will be programmed based on the developed rule base.

3. List of deliverables provided in this quarter by task (product date)

4. Progress on Implementation and Training Activities

5. Problems/Proposed Solutions

- We might need additional time to finalize the rule base and complete the final report based on the final results of Task 6 due to the reasons below:
 - It is becoming clear that the adaptive signal strategies such as SCOOT and SCATS are not readily available for us to implement in Paramics. This considerably slows down our progress since we have to build algorithms similar to these and then program them.
 - Also, it is clear that we need to use CORSIM for RT-TRACS algorithms since they are only available for CORSIM. This was a totally new step for our research.
 - We have also introduced hardware-in-the-loop concept. But due to the impossibility of getting run time extensions for CORSIM we could not obtain positive results in this approach.
 - One new problem is the fact that we have to use different simulation packages for different types of evaluations. Thus, we are now trying to compare the results obtained from different software packages to ensure that the final results are compatible.
 - There is a considerable delay between the official starting date of the project and the actual starting date, date when the account is set-up and students can be hired. This time lag also affects the availability of students. Now we have all the student we need, however, the time lag can cause some delay at the end of the project.

6. Budget Summary*

Total Project Budget(# of years)	2 Years	\$318,458.00
Total Project Expenditure to date		\$310,208
% of Total Project Budget Expended		97%
Task Order Number/Study Number:		101 / 4-26682
Current Task Order Budget (# of years)	Year 1 and 2	\$318,458.00
Actual Expenditure to date against current task order		\$310,208
% of current task order budget expended		97%

* These are approximate expended amounts for the project; these estimates are for reference only and should not be used for official accounting purposes. For a more accurate project accounting please review the quarterly invoice for this project.